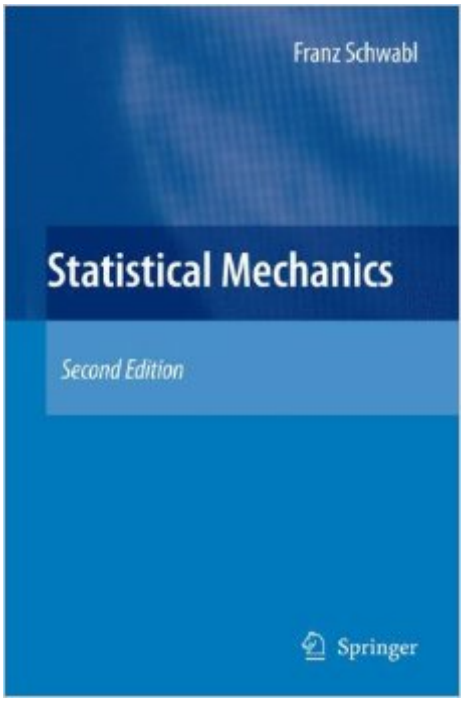
Statistical Mechanics (Advanced Texts In Physics)



Synopsis

This completely revised edition of the classical book on Statistical Mechanics covers the basic concepts of equilibrium and non-equilibrium statistical physics. In addition to a deductive approach to equilibrium statistics and thermodynamics based on a single hypothesis this book treats the most important elements of non-equilibrium phenomena. Intermediate calculations are presented in complete detail. Problems at the end of each chapter help students to consolidate their understanding of the material. Beyond the fundamentals, this text demonstrates the breadth of the field and its great variety of applications.

Book Information

Series: Advanced Texts in Physics

Paperback: 578 pages

Publisher: Springer; Softcover reprint of hardcover 2nd ed. 2006 edition (November 29, 2010)

Language: English

ISBN-10: 3642068871

ISBN-13: 978-3642068874

Product Dimensions: 6 x 1.4 x 9 inches

Shipping Weight: 1.9 pounds (View shipping rates and policies)

Average Customer Review: 4.7 out of 5 starsÂ Â See all reviewsÂ (3 customer reviews)

Best Sellers Rank: #847,765 in Books (See Top 100 in Books) #258 inÂ Books > Science & Math > Physics > Solid-State Physics #385 inÂ Books > Science & Math > Physics > Dynamics > Thermodynamics #558 inÂ Books > Science & Math > Physics > Electromagnetism

Customer Reviews

I have found Schwabl’s Statistical Mechanics to be an indispensible reference this semester even though it’s not on the reading list for my stat mech course (intro graduate level). I should qualify that statement by saying that I’ve used it primarily for the Ch.6 on magnetism, and the Ch.4 on ideal quantum gases, and I have not looked at any of the exercises at the end of chapters so I cannot attest to their (non)usefulness.The text is well made (LaTeX!) and full of illuminating diagrams. Other than a persistant occurence of the word "und" the translation from german seems to be flawless, and the notation seems pretty standard, consistent, and intuitive.As for the presentation, it seems a bit eclectic. Not that I’m an expert, but Ch.1 is an extremely terse forray into some advanced concepts that are irrelevant until about Ch.3. It seems odd to bring up the microcanonical/grand canonical ensembles before the chapter on thermodynamics, but that could

just be my bias due to the structure of the course I'm taking right now.The Ch 8 on Brownian motion, the Fokker-Plank and Langevin eqns is not standard, but actually quite fascinating & I don't see why those topics are usually left for more advanced stat mech books.In short, a great supplement! And to the professors out there, I would suggest at least mentioning the existence of this book.

I took Stat Mech in my senior year of college, and the assigned text book was Reif's "Fundamentals of Statistical and Thermal Physics." I'm glad somebody recommended that I supplement my course with this one, because it's a far more thorough handling of the subject.For one thing, it approaches statistical physics with a quantum mechanical point of view (Reif doesn't). This was immensely useful for my understanding of the subject since I'd already taken QM. It's also exceedingly easy to read - well laid out and with helpful diagrams. Sections are well labeled and organised, as are equations (yeah, LaTeX!). And the problems at the end of each section are numerous, and fun to do (you won't find the answers at the back, though).As for the material itself, the entire book takes a deductive approach based on the form of the microcanonical density matrix. It's a beautifully simple albeit non-standard approach. In fact, the text is peppered with non-standard forms of many of the key equations, which are very interesting.All in all, this is a very well written/translated, easy to understand introduction to statistical physics, with enough additional material to serve you beyond your first course with it.

There are too many junky books on statistical mechanics, reading them is a waste of time. This book is extremly eleganlty writen, you will enjoy reading it.

Introduction to Statistical Learning: with Applications in R (Springer Texts in Statistics) Statistical Physics of Fields Fluid Mechanics, Second Edition: Volume 6 (Course of Theoretical Physics S) Fundamentals of Physics II: Electromagnetism, Optics, and Quantum Mechanics (The Open Yale Courses Series) The Feynman Lectures on Physics, Vol. I: The New Millennium Edition: Mainly Mechanics, Radiation, and Heat (Volume 1) RealTime Physics Active Learning Laboratories, Module 1: Mechanics The Feynman Lectures on Physics: Volume 1, Quantum Mechanics